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The University of the State of New York

The State Education Department

1966

The University of the State of New York

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VICTOR H. CAHALANE	Assistant Director of State Museum

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1965	William C. Steere	New York City
1966	George F. Goodyear	Buffalo
1967	Chester M. Suter	Chatham
1968	Brian M. Mason	New York City
1969	Vacant	

The Staff

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EILEEN A. WOOD	Senior Stenographer
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VACANT	Stenographer (NDEA)

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ANTHONY GENSICKI	Building Guard
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WILLIAM C. ZIMMER	Museum Caretaker

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JOHN A. HELLER	Museum Photographer

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JACOB SMALLENBROEK	Carpenter
JAMES WIEDEMANN	Maintenance Man (Carpenter)

General Statement

I have the honor to return the 127th Annual Report on the activities and accomplishments of the New York State Museum and Science Service for the year ended June 30, 1965.

Museum attendance is rising everywhere. In Moscow,* Leningrad, London, New York, and Albany queues of expectant people line up on the sidewalk outside of public museums waiting to satisfy some thirst for culture. The increase in museum attendance is part of the revolution of rising expectancies that is going on everywhere in the world today. But only in Leningrad have I seen museum authorities close the door on the waiting public because the museum halls are already overcrowded and until part of the throng can be exuded from the building. Indeed, a colleague who is Director of the National Museum of Denmark commented to me when we both observed this: "Do you ever close your museum because it is overcrowded? We don't." I had to admit that this never happens in Albany.

We are all familiar with the pictures of the long lines waiting to visit Lenin's tomb in Red Square or to gain access to the treasures of the Kremlin. But similar crowds of eager Russians and foreign tourists are encountered at the Tretiakoff Gallery and the Historical Museum. On entering the Kremlin Palace, visitors are required to put on carpet bag slippers to protect the parquet floors. The collections are tremendous and overwhelming — case after case bejeweled thrones, saddles, the robes of the Bishops of Moscow, and their portraits. The elaborate goldwork by the silversmiths of Italy, Germany, and France, the golden frames for icons set with turquoises, emeralds, and other precious stones, not to mention the crowns of the Czars with their heavy weight of diamonds, sapphires, emeralds, rubies, etc. — comprise a feast that the eye cannot take in at a single glance. Cases are poorly lighted with overhead illumination and contrasting daylight enters from outside through heavy damask curtains. A judicious selection of the better specimens could be shown to advantage with improved lighting.

One finds the missing icons from their empty frames in the Kremlin in the Tretiakoff — notably the Virgin of Kiev. I had gone there intentionally because that museum specializes in Russian painters.

* Travel was supported, in part, by a grant from the Social Science Research Council.

Dr. William N. Fenton, Assistant Commissioner for State Museum and Science Service. The influence of the Museum extends far beyond the borders of the State.

As the son of an academic still life painter, I could not but be amused by the comment of my Intourist guide that the period of Russian still life painting in the 1920's celebrated the return to opulence in food when I knew that much the same kind of painting, both landscapes and still life, was going on in New York City before the depression among academicians who were reasonably well fed.

Likewise, in the Historical Museum in Red Square one encounters throngs of people. Collections are rich, exhibits are crowded, but the specimens on view are of extreme interest to a foreigner. In the large prehistoric section, which is better displayed, are some remarkable specimens of Neolithic pottery that closely resemble Woodland pottery from eastern North America. Harold Hochschild, Chairman of the Commissioner's Committee on Museum Resources, had alerted me to look for a wooden dugout and a bateau. In searching for these objects, I had sought out a curator, and when I commenced to point out parallels between America and Siberia and we discussed these parallels animatedly in the hall, we were soon surrounded by an entourage of curious Russian public, who listened as we talked, translated from one language to another, until our message finally reached some speaker of a distant local dialect at the rim of the crowd and everyone nodded appreciatively. As we moved from case to case and hall to hall, I found it difficult to carry my own photographic equipment, a courtesy that was accorded me by some man and his son in seeming appreciation for the message that I was bringing to them.

In Leningrad where I went to participate in the celebration of the 250th anniversary of the Institute of Ethnography, which had been founded by Peter the Great, the Moscow experience was intensified by colleagues bent on proving that Leningrad is indeed the cultural center of the U.S.S.R. In honor of this celebration, the Institute and the museum buildings had recently been painted a bright green with white trim and flew the red flags of jubilee. Following the celebration, I spent one day at the Ethnographic Institute studying collections from North America with the help of Dr. Erna Siebert. I have never experienced more cordial relations with museum colleagues, who arranged to close off a hall, to open cases, to assist me in reading the catalog, and afterward supplied photographs of specimens when my film ran out. Because most Soviet colleagues are not equipped to entertain in their homes, one is taken as a guest to the staff dining room in the Academy of Sciences next door, which is set apart from academicians and where the atmosphere resembles a university faculty club. Here the conversation ran to museum matters, to raising budgets, to priorities in support of the sciences, to the public support of museums, and to problems of mutual interest

in ethnography. Space is at a premium in the Soviet Union and colleagues work in tight quarters, desk by desk. When I commented on this, I was told that staffs had increased enormously in recent years, and in the older institutes the space problem is part of the budget problem, and reflects the place of one's institution in the scheme of things. Museums that come under the Academy of Sciences enjoy high prestige, but a low priority, coming after space science and the physical sciences. Budgets are more generous for museums which fall under the Ministry of Information such as the Museum of the Ethnography of the Peoples of the U.S.S.R. which contains excellent ethnographic exhibits, well displayed and well lighted, even though the specimens were borrowed from museums not as well supported.

The Hermitage collections are too overwhelming to mention except in passing, but the Scythian gold in the Treasure Room from the region north of the Black Sea, and the Altai burials from central Siberia, featuring elaborate felted tapestries, costumes, and horse apparel, send one back to the great comparative works in ethnography and to the classical writings on the peoples of Siberia.

Every museum man who is a scholar wants to see the study collections and to handle materials in his field. When he is privileged to do this, the condition of the study collections tell him a good deal about the nature of public support of museums. The want of support for equipment, the shortage of special supplies, such as paper cartons, in Russia, contrast with the arrangement of study collections in the British Museum in London and the great collections at Oxford and Cambridge. The condition of the collections and the way they are stored affects directly their accessibility as research materials and how they can be retrieved for study, and is directly related to the problem of inventory. In general, there is a crucial need today in all of the museums of the world to get the collections in such shape that they will be accessible for study, and to the extent that this is not true, they are not being studied because younger students simply do not know where the collections are.

The heightened public interest in museums here and abroad has led to the planning of new facilities. In Russia, the crowds were more apparent than new buildings, although the older ones are being refurbished. At the British Museum in London, I toured the ethnographic storage collections. Since my last visit, a decade ago, a revolution has occurred and they are now shipshape, thanks to their present keeper, Mr. Adrian Digby, who began the renovation after the evacuation of the collections from London and their return following the Blitz.

The collections at the Pitt Rivers Museum in Oxford are arranged systematically according to the donor's intent, but I was not prepared for a revolution in thinking nor the planning for a new facility. Bernard Fagg, coming to the Directorship from Nigeria, accepted the old limitation that the collections must be arranged by cultural object and activity, but combined this limitation with a geographical presentation according to the major ecological zones of the world, which he proposes to reproduce in a climatron around which the collections will radiate in concentric rings, each devoted to a major artifact type, the ethnographic collections being superimposed stratigraphically above the archeological collections in the basement. His is the only original museum idea that I have encountered in a decade of visiting collections. Attached to Oxford University and situated in the heart of the crowded city, the Pitt Rivers has always been a research and teaching establishment. Even there, the recognition of public interest in the university community precluded taking the museum to the suburbs. On my return to London, I was pleasantly euchered into the position of giving testimony before the Standing Committee on Libraries and Museums, a challenge which I accepted gladly, for the parallels that it offered to the budget process in Albany. It would seem that space, budget, and personnel are the major power foci in all bureaucracies and require similar kinds of justification.

Participation in the VIIth International Congress of Anthropological and Ethnological Sciences, held in Moscow August 3–10, 1964, had afforded the occasion for me to make the previous observations on museum attendance and collections. My participation in these Congresses extends back to 1952 when I became a member of the American Committee of the Permanent Council of the Congress. This same concern had taken me to Prague in 1962 when we reviewed the Russian plans for the Congress as provided in the statutes. Meanwhile, wide participation by American colleagues had been encouraged by writing hundreds of letters, seeking foundation support of travel, and enlisting supplementary support of universities, colleges, museums, and local foundations, wherever assistance was requested. The result of this effort, largely conducted in the State Museum office, was a sizable American delegation numbering well over one hundred and which one English colleague characterized as a veritable invasion.

The Congress was attended by 1,094 delegates, representing 58 countries, who read papers in 27 sections, totaling 812 communications. The writer's participation consisted of attending two meetings of the Permanent Council, one meeting of the Union of Anthropological and Ethnological Sciences, and reading two papers — one in the museology section and the other in the symposium honoring the work

of Lewis Henry Morgan, a distinguished New Yorker of the 19th century. A strong section on museology had been one of the proposals of the American delegation to Prague. This session was well attended by Soviet museologists who made several enthusiastic communications. It is the custom for Russians to come with their papers completely printed in advance. Knowing this and being aware of the communication problem, copies of our papers had been duplicated and were given to the translators. By reading slowly in English one achieved some measure of communication and the Russian translator who had taken home my paper the evening beforehand came prepared the next day with an abstract in Russian. The concern of American ethnologists over getting museums back into the forefront of ethnographical research aroused a great deal of interest and discussion that continued throughout the Congress.

The Morgan symposium on August 8 was given top billing and was held in the great hall of Moscow University, which is used also for greeting returned astronauts. They were equipped for simultaneous translation into Russian and French, but oddly enough not into German. A thousand persons were in attendance. The idea of devoting a symposium to the work of Morgan had been suggested at Prague by an English colleague. The Soviet reaction was " If we proposed it, it would be politics; since you propose it, it is science." The reason for this is that Morgan, who was a Rochester corporation lawyer and an amateur scientist, had written on the evolution of human society and he had been read by Marx and Engels and is, consequently, a hero in the U.S.S.R. My own contribution, which was a projection of the theory developed in ANCIENT SOCIETY (1877) to recent political developments among the descendants of the Iroquois whom Morgan studied, was well received because, to quote a Soviet colleague, " You gave us new information. You brought Morgan up-to-date; second, you did not attack the Marxists, so we did not have to defend them; and third, you finished on time." This was an unforgettable experience.

At the height of the Congress, there had been 2000 participants. The Congress was an important event politically and socially in Moscow. It enjoyed a good press. Both Pravda and Izvestia carried it. Photographers swarmed all over the place at major sessions and stalked the Congressists in the corridors. Noticeable, was a tendency to mug the characters from shatter-belt countries, and, particularly Negroes from Africa and representatives from countries in southeast Asia.

Learning to walk in the moccasins of another society on the paths of another culture brings one home with a new perspective. Seeing

again with new eyes the stark demolition of Albany's south end, recalled its purpose, and revived the hope of a new facility for the State Museum. This hope materialized in a conference with Governor Rockefeller in his New York Office on December 2 when members of the Regents, the Commissioner, Dr. Flick, and the writer, appeared to present our plan for the new Cultural Center on the Mall. Prepared as we were to accept a minimum of a new State Museum, we succeeded in introducing the concept of the relatedness of library resources and museum resources in a single center devoted to the cultural enhancement of the Empire State. As a result, we and the architects were directed to proceed with planning, which was our principal concern for the rest of the year.

Travel abroad inevitably engenders requests for speaking engagements which partake of public service. A talk on Science and Museums in Russia was repeated to several church and service clubs, and to college audiences (Appendix C).

If this report reads like the voyage of a 17th century traveler to parts previously unknown, it is hoped that the first person may be forgiven in the confidence that the programs of the Museum and Science Service were being conducted with distinction by the scientists and curators whose reports follow.

At the request of the Seneca Nation of Indians, the writer took charge of a provisional planning committee to undertake the research and design for an outdoor museum called *Iroquoia* on the Allegany Indian Reservation. In connection with this work and in continuation of ethnological studies among the Seneca, he made several brief field trips to Salamanca and environs while writing a report on the second housing revolution of the Seneca Nation. The work of this committee was still in progress at the end of the year.

At the professional level, Dr. Fenton continued to serve on the Board of the American Anthropological Association and accepted the chairmanship of the Committee on Anthropological Research in Museums. This Committee has two tasks: 1. As an advisory panel for the National Science Foundation to a pilot project to survey the ethnographic collections in Oklahoma, and 2. As an advisory panel to the Wenner-Gren Foundation for Anthropological Research to foster a program of Museum Research Fellowships, which are designed to attract predoctoral students to undertake research using museum collections. He attended the annual meetings of several learned societies listed in Appendix B and read a paper in a symposium on the "Image of the American Indian" held at the American Philosophical Society by the American Indian Ethnohistorical Conference.

In recognition of his contributions to Iroquoian research during 30 years, Dr. Fenton was awarded the Cornplanter Medal for Iroquois Research at a convocation dinner of the Cayuga County Historical Society, Auburn, in June. The Cornplanter Medal, founded in 1904 to honor such worthies as William Beauchamp, Reuben Goldthwaites, Arthur Caswell Parker, and J. N. B. Hewitt, was revived this year with the thought of making it an annual award to scholars in this field.

Besides a report on the Moscow Congress, Dr. Fenton published three original contributions, and continued two other projects of writing: A general book on the Iroquois, and the editing of Lafitau's *"Customs of the American Savages"* for The Champlain Society.

William N. Fenton
Assistant Commissioner for
State Museum and Science Service

STAFF CHANGES

On August 6, R. Lynn Moxham was appointed to the position of Senior Scientist (Geochemistry) and Donald M. Lewis received appointment October 13 to the reclassified title of Scientist (Botany). S. Craig Smith resigned as Museum Instructor in August being replaced by Margaret K. Clarke in September, and Janet L. Stone resigned as Museum Education Supervisor in February. There were 3 Departmental transfers in the clerical and stenographic section. Maryellen Canform transferred in September and the vacancy was filled by Phyllis M. Cozzolino in January. Catherine Stapleton transferred in January and was replaced by Alice A. Gadomski in February. In April, Linda A. Heeran moved to another unit of the Department, and Patricia Sargood resigned in May. These two positions remained vacant through the end of the reporting period. Marion B. Bender retired as Clerk; February 18 and, upon reclassification of the position to Typist, Carol J. Lawson was appointed early in May.

The Science Service

The Science Service is organized into three Surveys: the Anthropological, Biological, and Geological. The work of the Surveys employs the existing collections of the State Museum and augments them in its research.

ANTHROPOLOGICAL SURVEY

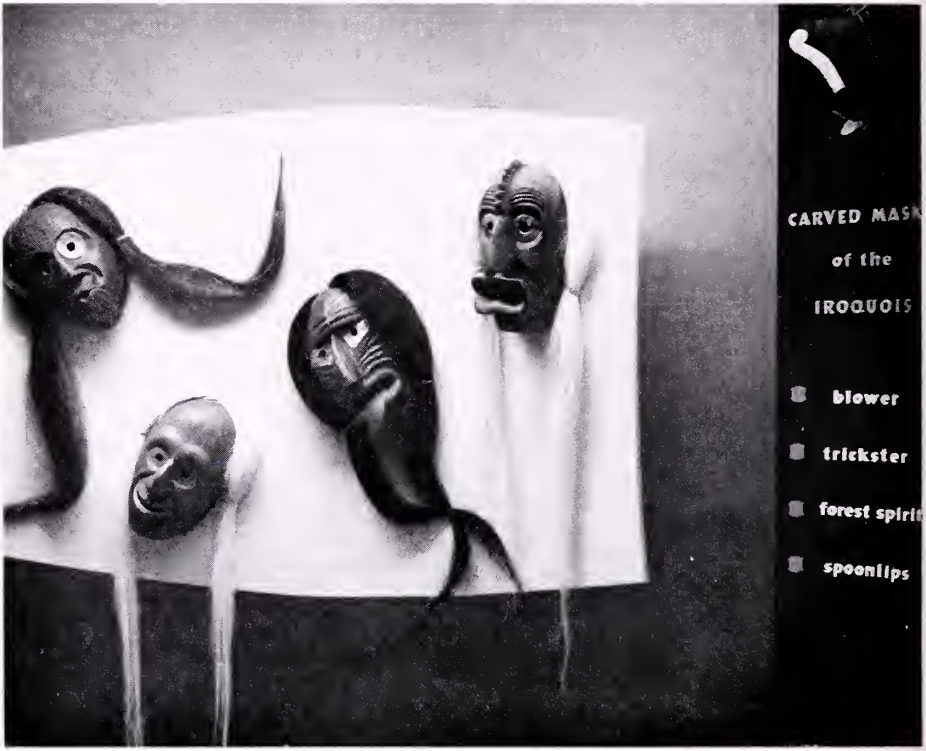
An Anthropological Survey conducts research and other inquiry into the aboriginal history of New York State and the languages and cultures of their extant descendants; it interprets and relates these data to the existing cultural sequence and chronology for New York and adjacent sections of the Northeast, and attempts to reconstruct these cultures from the Paleo-Indian to the present.

Research results related to two major projects comprised the principal accomplishments of the Anthropological Survey — the excavation of three sites on Martha's Vineyard, Massachusetts, for the purpose of studying the relationship of coastal ecology to the settlement pattern, and research on the prehistoric cultures of the Hudson Valley.

Studies of coastal ecology and settlement adaptations, as a phase of the aboriginal settlement patterns in the Northeast, were conducted on Martha's Vineyard under a National Science Foundation grant. The State Archeologist and a party of three graduate students, excavating on three sites, discovered in stratigraphic relationship a well-differentiated cultural sequence consisting of eight members and related complexes. Six of these have been radiocarbon dated between 2270 B.C. + or — 160 years and A.D. 1380 + or — 80 years.

The cultural succession differential at Martha's Vineyard, the first of its kind on record for New England, demonstrates the progressive adaptations from Archaic times onward, of a whole series of different inland cultures to a littoral and finally a full marine environment, involving differential utilization of shellfish, fish and marine mammals.

The second major project, the prehistoric cultures of the Hudson Valley, the work of Robert Funk, resulted in the addition of over 30 sites to the State Site Records and provided considerable fresh new data on the regional culture sequence, beginning in Paleo-In-



Reproductions of carved Iroquois Indian masks, blower, trickster, forest spirit and spoonlips, stare grotesquely from a temporary exhibit in Orientation Hall.

dian times and ending with the European contact period. Most of the information pertained to the Archaic and Middle Woodland periods.

Key sites yielding remains of preceramic occupations were excavated on Lake George and throughout the Hudson Valley. At the stratified Sylvan Lake Rockshelter near Poughkeepsie, the lowest (Laurentian Archaic) levels produced hearth charcoal dated at about 2800 B.C. A previously unnamed culture, the Sylvan Lake Complex, was discovered, estimated to have lasted from 2300 to 1500 B.C.

Other field work was conducted at Endicott and Ephratah.

The State Archeologist excavated, with student assistance, on a large village site of early Owasco provenience at Endicott. Radiocarbon dated at A.D. 1070 + or — 60 years, this station produced excellent data on housing, foods and village life for the Late Woodland phase of culture.

At the late prehistoric Mohawk Iroquois site of Garoga, in Ephratah, the third full season of excavations contributed significantly to the data of previous seasons.

Garoga apparently represents the culmination of late prehistoric Iroquois community life, in which village size, population density, warfare and intensive maize cultivation were reaching their respective peaks.

On the site at least 8, possibly 10, longhouses were present. The best defined houses averaged 20 feet wide and ranged from 180 to 225 feet long. Central rows of fireplaces and interior support posts were clearly visible. Deep storage pits for corn, beans and other foods were found along the bedlines. Over 300 such pits were unearthed in three seasons, 80 of which were excavated. Much artifactual material and large amounts of refuse bone were recovered from pits and midden areas. In the 1962 season a double stockade was discovered which protected the only vulnerable side of the high hill on which the site is located.

Of especial interest was the finding of a small clay face effigy, a tangible hint of the falsefaced societies so prevalent in historic times. The site may have been on the verge of trade contacts with Europeans, as evidenced by the recovery of a tiny piece of brass from a post mold.

Cooperative Work

Cooperative work of the State Archeologist included the instruction of a summer school group from Harpur College in field methodology under an adjunct professorship in anthropology, and the transfer of the Roundtop site excavations at Endicott to Harpur

College with instructions and assistance given in staking-out the site. Robert E. Funk served as adjunct instructor in archeology for Harpur College at the Garoga dig. He also performed highway salvage surveys on several planned State highways.

The State Archeologist attended and gave papers at 5 conferences, the principal one being the 36th International Congress of Americanists at Barcelona, Madrid and Seville, Spain.

Over 250 visitors, local and out-of-town, including professional colleagues and amateur archeologists came to the Survey for consultations. Aid and advice concerning research plans, museum exhibits, site restorations, artifact and cultural identifications, term papers, dissertations and manuscripts were provided to representatives of the State University of New York at Buffalo, Syracuse University, Franklin and Marshall College, Harpur College, Cayuga Museum at Auburn, the Springfield, Massachusetts Museum, the Peabody Museum of Harvard, Bennington College, University of Chicago, Roberson Memorial Museum at Binghamton, the Fairbanks Museum, St. Johnsbury, Vermont, and several private collections.

William A. Ritchie
State Archeologist

BIOLOGICAL SURVEY

The Biological Survey comprises the offices of botany, entomology and zoology. This grouping of disciplines not only recognizes their common objectives of research and service in the life sciences, but also permits a coordinated approach to complex, interrelated problems such as water pollution and air pollution, which affect both animals and plants.

Research projects of the Biological Survey fall mostly within the area of natural resources and ecology, or the relationship between organisms and their environment, and the area of public health.

Among the research projects in the area of natural resources and ecology were forest tree problems including studies of the white pine weevil which affects New York State's most important commercial forest tree; specialized botany problems involving pollen and including studies of fossil pollen, which help determine climate conditions of prehistory; and work on the second of the projected six volume *Handbook of North American Birds.*

Within the area of public health, projects included the studies of travels of airborne pollen relating particularly to allergies such as

those which cause hay fever; and studies of arthropod borne viruses ("arboviruses") and their vectors including ticks, blackflies and mosquitoes, in the St. Lawrence region and on Long Island.

Natural Resources and Ecology

The principal forest tree problem, studied by Donald P. Connola was that of the white pine weevil and the genetic and physiological factors which determine the resistance of white pine to weevil attack. Since white pine is the State's most valuable commercial tree and because virgin stands have nearly disappeared, reforestation with white pine is a major enterprise. The principal problems are the weevil and blister rust.

In the earlier, statewide studies of white pine weevil, correlations between certain site factors and the rate of attack were demonstrated. Data obtained in 1964 from caged seedlings from some of these sites indicated a correlation between weeviling and the geographical source of the trees, and a possible correlation between weeviling and water deficiency.

Another forest pest problem under study by Connola was that of biological control of the gypsy moth. This involved a continuation of tests of new formulations of *Bacillus thuringiensis* in the hope of finding a more effective formulation of this biological control agent. In 1965, to get more precise coverage, a new formulation was applied by helicopter. The formulation has improved greatly, but requires still further improvement before it can be expected to give reliable, practical control.

Studies of other forest pests included that of the red pine scale. Heretofore regarded as exclusively a pest of red pine (*Pinus resinosa*) it was discovered last year on Japanese black pine in Roslyn, Long Island. A limited survey failed to reveal any red pine scale infestations outside the previously known infested area, but the threat remains, and quarantine regulations are being considered by the appropriate State and Federal agencies.

In the study of fungus diseases and other causes of deterioration of forest trees, particularly fungi associated with the American beech tree, some 1,355 inoculations were made with fungi isolated from dead and dying beech twigs by Rodney C. DeGroot. None of the fungi, however, appeared to be the cause of the extensive dieback of twigs and small branches.

The American beech tree is not now valuable commercially in New York State, but it is important in camping and recreation areas where it is often the only tree left from the original timber stands. Espe-

Dr. John Frempong-Boadu testing blackfly larvicides. This work was done in the New York State Conservation Department fish hatchery at Cambridge, N.Y. Dr. Frempong-Boadu, originally from Ghana, now a student at the Yale University Medical College, was paid partly on a Yale fellowship, partly from Science Service, and partly from the Regents fund.

cially where beech is the dominant tree, fungus and scale infestations readily take over.

Also within the area of natural resources and ecology was a study of fossil pollen from Lake Mohonk and Rhododendron Swamp near New Paltz, by Donald M. Lewis. Results of this study can be used to determine the climate conditions of ancient life. The pollen types reveal the tree or plant origin, placing the plant in a particular era of prehistory. The study can also be used to determine climatic cycles for a particular region.

Lewis took core samples from the swamp and from under the lake bottom. After various concentration procedures, slides of the pollen type were prepared and analyzed. His study reveals the original plant pioneers following the retreat of the glacier. Preliminary interpretation of the high pollen frequency of plants in the lake sediments indicates a chronological base some 3,000 to 4,000 years later than that of the swamp.

Other pollen work included the analysis of pollen samples collected by the Anthropological Survey in a cave along the Hudson River and further "pollen rain" studies. The latter study concerns contemporary pollen deposition under simulated bog and lake conditions. An attempt is made to correlate the amounts of a particular pollen type and the frequency of particular plants in the area.

New York State's waterfowl and fish are involved in Eugene C. Ogden's work on the identification of aquatic plants from fragments. The plant fragments found in the stomachs of fish or waterfowl can be analyzed and this knowledge can be used when restocking fish and to learn more about the feeding habits of waterfowl.

The small mammal survey in St. Lawrence County under the direction of Paul F. Connor was made from July through September, 1964. This work which incidentally contributes to the State Health Department information on the occurrence of pathogenes in the animal population, is primarily a continuing study of the ecology and distribution of the mammals of the State. St. Lawrence County was chosen last year since it was also the site of a special surveillance program to collect the ectoparasites and viruses that might be carried into the area by small mammals, such as house rat and black rat, which escape from foreign vessels that travel the St. Lawrence Seaway, and also since a new arbovirus had been found across the border in Canada.

Connor also compiled and completed the manuscript for a Museum Bulletin on the Mammals of the Tug Hill Plateau. The plateau is located in the Adirondack area of Lewis County, a relatively unknown and inaccessible region of New York State.

Work on the *Handbook of North American Birds* by Ralph S. Palmer included the completion of about 1,000 pages of Volume II dealing with waterfowl of North America. Palmer as editor of this six-volume work, supervises the writing, the assembling of records of migration and breeding habits and illustration layouts. The handbook, which is sponsored by the American Ornithologists Union, is being printed by the Yale University Press.

After a trip to Florida in the spring of 1965 to study and photograph waterfowl, Palmer reports he has now seen, alive, nearly every species of waterfowl that has been recorded as occurring in North America. He has also photographed most of them in captivity.

Public Health

The major projects of the Survey within the area of public health were travels of airborne pollen and studies of arthropod vectors of disease organisms.

The study of travels of airborne pollen was continued by Ogden and staff members, supported by a National Institutes of Health grant. It is hoped that these studies will provide a better understanding of pollen travels — the distance pollen is carried by airborne currents to any given point, and the height in the air at which pollen is located. The project included dispersion studies of corn pollen, pollen in and over forests, variation in pollen concentration at different heights, and research on the instrumentation needed in pollen studies.

The second major project, studies of arthropods of public health importance was directed by the State Entomologist, Donald L. Collins, and Hugo A. Jamnback, Jr., assisted by temporary employees, Robert Means in the Massena Mosquito Control Program, Dr. John Frempong-Boadu of the Yale University Medical College in the Cambridge blackfly work, and Dr. Hans Schober in the Suffolk County Mosquito Research program. Financial aid for the temporary employees came partly from grants and fellowships.

In the St. Lawrence valley the arbovirus survey was carried out in cooperation with the State Health Department. Isolations of Powassan virus, the cause of sometimes fatal encephalitis in man, were made from woodchucks on Barnhart Island and from ticks found on them, in the St. Lawrence River.

In the Massena Mosquito Control Program, the first survey of nuisance mosquitoes and their breeding sites was completed during the summer of 1964. Specific recommendations for ditching, draining, filling, or chemical control of the main breeding sites were given in a report by Means. Control operations by the town began in the

spring of 1965. Although the results are not yet available, it is hoped that the Massena program may be a prototype of the kind of program suitable for upstate communities.

Research on mosquitoes in Suffolk County centered largely on problems of duck farms with special reference to the potential of the various species of arthropods as vectors of encephalitis and other viruses, and on studies of the use of the new insecticide Abate. The research was sponsored and largely financed by the Suffolk County Mosquito Control Commission, under the direction of the State Entomologist and with the assistance of the Yale University Medical School.

The Blackfly larvicide studies at Cambridge, New York, directed by Jamnback, were made possible by a grant from the World Health Organization to the Regents Fund of the State Education Department with the cooperation of the State Conservation Department, and the Yale University Medical School.

Donald L. Collins
Principal Scientist, Biology

GEOLOGICAL SURVEY

The Geological Survey analyzes and synthesizes the events and life of New York State's ancient past in order to explain the modern physical environment as it pertains to rocks and minerals, ores and soils, and land forms. By research and service activities it serves as the State's specialist in the earth sciences and makes its data and interpretations available to the public by consultation and publication.

Each year, the pace of activity in the Geological Survey increases, with more varied and comprehensive research efforts and more demands by the public, and especially by other governmental agencies, for augmented service functions. During 1964–65 these have been met, as well as possible, by the continued efforts of full-time staff people, by temporary experts hired specifically for the job at hand, and by support of the New York State Museum and Science Service Honoraria program.

Two factors have made this a memorable year — the outstanding character of reports published or in press, and new endeavors by the Survey which tend to update its activities.

Completed for publication was the Devonian Correlation Chart by Lawrence V. Rickard which is, to the best of our knowledge, the first multicolor correlation chart prepared for any geologic period.

The chart not only summarized the latest research thought on the classic New York Devonian section but illuminated it by identification and synthesis of the major lithologic types into a rational geologic model.

Also completed was Charles W. Flagler's "Subsurface Cambrian and Ordovician Stratigraphy of the Trenton Group — Precambrian Interval in New York State." The Survey recognizes the necessity of publishing maps and sections based on studies of subsurface (largely oil and gas well) data. These are not only of great value to industrial concerns who tap the bedrock resources of the State, but are also of inestimable help to geologists who need to understand the third dimension of the rocks they study.

New endeavors include the initiation of programs to make use of data processing facilities in the solution of geologic problems, a study of conodonts from the Silurian and Devonian rocks of the State, and continued emphasis on various phases of environmental geology.

Data processing facilities were used by Roger L. Borst, W. Lynn Kreidler and R. Lynn Moxham. Borst used computer facilities in the State Education Department and at Rensselaer Polytechnic Institute to analyze crystallographic data for his study of mineral growth in the Helderberg limestones. Kreidler worked with Department specialist to transfer all geologic and engineering data on 4,600 New York State gas well records to data cards for later recall and computer analysis, a project that will expedite the program of subsurface studies. In cooperation with William Fox, Williams University, and M. B. Bayly, Rensselaer Polytechnic Institute, some mineral composition data previously gathered by Moxham was subjected to factor analysis by the M.I.T. 7090 computer with a view to establishing the compositional and other factors controlling the substitution of minor elements within the minerals studied.

The study of conodonts collected extensively from the Silurian and Devonian rocks of the State by Rickard has enabled him to conclude that: 1. conodont zones established for the Silurian and Lower and Middle Devonian of Europe can be recognized in the New York State rocks of similar age, and 2. it appears probable that a detailed zonation, based on conodonts, will be available in the near future for the Silurian and Devonian of New York State.

Conodonts are tiny, enigmatic fossils which have been studied widely and classified, even though their origin is unknown. Continuation of this study will be of the greatest assistance to geologists attempting to unravel the complex stratigraphy of New York State and to make intercontinental correlations.

Environmental geology projects are being carried on by the State Geologists, by James F. Davis and Miss Karen Lukas.

The State Geologist with Dr. John M. Bird, State University of New York at Albany, proposed the use of pumped solids pipelines to transport wastes of the Mohawk and Hudson River Valleys to controlled disposal off the Continental Shelf, also leading to increased fisheries. After review by State government specialists it was decided that the proposal, while feasible, was not economically competitive in the present state of technology.

The preparation of detailed proposals for environmental geological studies of the Lake George-Lake Champlain Basin and the Nassau-Suffolk County area of Long Island, in connection with regional study programs of the Office of Regional Development, was done by the State Geologist and Davis.

Davis prepared a Mineral Resources Map and explanatory text for the Oneida and Herkimer County Commission and critically reviewed their chapter on the geology of the two counties. He also canvassed producers of operating quarries and owners of abandoned ones in order to locate potential New York State sources of building stone for the South Mall complex of office buildings. Samples were prepared in the Survey laboratories and submitted to the Office of General Services and the South Mall architects.

As an additional contribution to environmental geology, Davis and Miss Lukas initiated a semi-reconnaissance survey of the sand and gravel resources of Dutchess County.

Planned Research

The planned research program by full-time staff members in addition to the publications and programs mentioned above include:

- the completion of field mapping in the Plattsburgh and Rouses Point quadrangles by Donald W. Fisher and the continuation of his extended mapping of Paleozoic rocks in six 15′ quadrangles in the Mohawk Valley.
- continued work on the manuscript and illustrations for the text chapter "Precambrian Geology of Northeastern United States" by Y. William Isachsen, totaling to date, 165 pages, plus 26 maps and figures, and 10 tables.
- the near completion of Moxham's study of minor element concentrations in the *International Geochemical Standards*, a study which provides a shakedown trial for the arcing and photometric procedure in the laboratories, and which gives the statistically

best values from the data, thereby greatly broadening the usefulness of these geochemical standards.

- Kreidler's assistance in checking logs and preparing details for illustrations in Flagler's publication on subsurface data.
- a study of the clay mineralogy of the Albany molding sand and superjacent soil zone and subjacent "bottom sand" by Davis.
- Isachsen and Moxham's collecting of representative samples from a 1,850 foot thick section of anorthosite exposed on Mt. Colden, which will receive petrographic and geochemical study in an effort to determine whether or not the anorthosite massif is the upper portion of a thick differentiated slab. This is a fundamental study because the origin of plutonic anorthosites in general is a matter of considerable conjecture and because the Adirondack anorthosite massif is a classic one being the most well-known example of such a body in the world.
- Arthur M. Van Tyne's work of washing and examining a large volume of ore cuttings and checking them for geologic formation tops in connection with the continuing study of gas well samples and their subsurface correlation.

Research projects carried on by temporary personnel included: an investigation of the paleobotany of the Upper Devonian in New York State by Dr. Harlan Banks, Cornell University; a stratigraphic and structural investigation of Taconic rocks eastward into the Stephentown Center quadrangle, Rensselaer County, by Dr. John M. Bird, State University of New York at Albany; remapping of Grenville stratigraphy and anorthosite bodies in the Lake Placid area (partial Survey support) by Percy Crosby, Chicago Teachers College, North; an investigation of zircon morphology and genesis in the various igneous and metamorphic rock types of the Precambrian of New York State by Dr. Donald Eckelmann, Brown University; and a continuation of the paleoecological study of the Lower Devonian Manlius Formation by Dr. Leo Laporte, Brown University.

Other projects by temporary personnel included: the completion of geologic mapping of surficial formations in New York State west of the Genesee River by Dr. Ernest Muller, Syracuse University; investigations of the pegmatite deposits of New York State by Dr. Li-Ping Tan, Columbia University and the Taiwan Geological Survey, with a manuscript submitted to the Survey for eventual publication; and Flagler's subsurface studies mentioned earlier.

The majority of the Survey's shorter contributions fall under the general heading of professional activities of the staff ranging from

services to taxpayers, both to visitors and to letter writers, to the publication of the *Empire State Geogram* and field guidebooks for the 37th annual meeting of the New York State Geological Association, the preparation of a full color geological-physiographic map of New York State, furnishing oil and gas production data for 1964 to a member of Federal and State agencies and advice to major industrial concerns regarding the disposal of liquid industrial wastes into subsurface formations of New York State.

Additional activities included recommending rules and regulations to implement the new Oil and Gas Conservation Law administered by the State Conservation Department, serving as advisor on exhibits for the Mollusca Alcove of Paleontology Hall in the State Museum, and preparing a report for the Governor's office dealing with the geology, economics and technology of rare earth, minerals, and metals and the prospects of worthwhile rare earth deposits in the State.

JOHN G. BROUGHTON
State Geologist

Geologists ponder a field problem in the Adirondacks.

State Museum

During the period 1964–65, almost 250,000 persons visited the exhibit halls of the State Museum. This eight percent increase over the previous year continues a long-term upward trend in attendance, by both organized school groups who receive classroom instruction and the general public.

An application for a Regents' Charter by the Utica Zoological Society was examined by the Assistant Director in an inspection of that organization's facilities, and a recommendation was submitted.

Studies of museum buildings and exhibits were continued by Mr. Cahalane for use in planning the proposed Cultural Center. Visits were made to the Williams-Munson-Proctor Institute, American Museum of Natural History, Princeton University Museum (science), New Jersey State Museum, Reading (Pennsylvania) Public Museum, Pennsylvania State Museum, and the Museum of History and Technology, Washington, D.C.

MUSEUM EXHIBITS

Within the four major museum exhibit halls — Indian, Biology, Geology, and Paleontology — important exhibits were added to Paleontology and Biology Halls.

In Paleontology Hall, the exhibit " Two Habitats of an Ordovician Sea " illustrating ancient life in the upper ocean and the bottom dwellers, is one of a series of permanent exhibits which illustrate New York State's geological history.

Projected paleontology exhibits, nearly completed, include a diorama on the ecological principles of adaptive radiation and dispersal. These scientific principles are illustrated by the spread and variation of a creature most people know something about — a pouched animal — from the original North American " possum " of the Late Mesozoic to the present. The other diorama features a form of Cambrian life known as Cryptozoon of which New York State has some remarkable fossil specimens. This interesting fossil was first described by James Hall, New York State's first State Paleontologist. Until the recent discovery of stromatolite-like forms produced by modern plants in Shark Bay, Australia, modern counterparts were unknown.

In Biology Hall, a four-part exhibit on reptiles and amphibians includes toads and frogs, salamanders and lizards, snakes and turtles.

Most of turtles found in New York are shown and described in one of the four new exhibits showing the State's amphibians and reptiles.

They are representative of those groups found in New York State. In the same area the mounts in the Wolf Exhibit were regrouped, cleaned, and repaired. Progress was made in placing them, with appropriate accessories of a winter snowstorm setting, in a new display.

Temporary exhibits, or exhibits which may be topical or timely, but which do not lend themselves to permanent installation, included aboriginal flintworking techniques and Iroquois Indian masks (fiberglass replicas), both installed in Orientation Hall. Another changing exhibit located in Orientation Hall is the "Little Theater" slide-tape program which is worked by a push button arrangement. New shows included "Flowers of New York," "Snowflakes," and "Water Pollution."

An innovation for the exhibits staff personnel was their participation in a series of six field sessions for the purpose of improving observational skills and recording data for future exhibit work. The fieldwork was followed up by practical application in the State Museum preparation laboratory and design rooms under the expert guidance of Louis J. Koster, Senior Museum Technician.

A committee of eight staff members, representing curators, education, exhibits, and the Science Service was chaired by the Assistant Director. It worked for several months on a general exhibits plan for the proposed Cultural Center. The result was an outline for the sequence of subject matter, beginning with the physical sciences, and culminating in man (Physical anthropology). The approach was ecological rather than sharply divisive by fields of science. It is hoped that the outline will serve as a sound basis for the detailed planning which must precede an exhibits construction program for the proposed building.

MUSEUM EDUCATION

The Education Office of the State Museum is concerned primarily with school groups and students who seek classroom instruction in the museum and supplementary reference information.

By using objects from the collections and by the use of exhibits as teaching tools, the museum classroom offers an added dimension of learning to that of the school's verbal and visual instruction.

Study skins of birds and mammals, live creatures including salamanders, lizards, fish, and sometimes birds and mammals, rocks, minerals, molecular structures, and Indian artifacts, are among the objects used by the education staff in the museum classrooms.

Over 40,000 children from kindergarten through senior high school came in school groups which registered. Of these, more than 23,000

received museum classroom instruction. Those who did not attend classroom sessions had only a general interest and, therefore, took an overall tour of the museum and its exhibits. About 3,000 additional children, who wanted classroom instruction, could not be accommodated because of limited education office personnel and teaching facilities, and because some teachers were unaware of the services available.

Three-fourths of the children who came were from grades three through seven. This probably is due to two factors; first, that the content of the curriculum in these grades has some relation to the museum exhibits and second, that the school schedules allow for out-of-school trips. A questionnaire response showed that for most students, the museum trip came in the middle of the topic being taught in school, or it was used as a course review.

Statistics concerning which schools send students to the State Museum reflect mobility. Most students in city schools do not have school buses and therefore do not go on trips. Of the 40,000 children who came to the museum 26,500 came from suburban and rural schools, 7,600 from city schools, 2,000 from neighborhood parochial schools, about 1,300 from private schools and about 1,000 from Scouts, 4-H, and similar groups.

Almost 1,000 college students visited the museum and of these 190 received instruction in various areas of interest.

In addition to the services offered to school students, an important part of science education is making information available to interested teachers, to keep them aware of new developments and to sustain their interest and enthusiasm. This is done by the Teacher Workshop Series sponsored by the Education Office.

Ten workshops offered in 1964–65 had an attendance of 280 teachers with the average workshop attendance numbering 28. The 1963–64 average attendance was 19. Attendance for six workshops had to be limited because of workshop facilities.

Workshop subjects and speakers included: Entomology, John A. Wilcox, Associate Curator (Entomology); History, William Lassiter, Division of Archives and History; Paleontology, Donald W. Fisher, State Paleontologist; Microbiology, Michael Darcy, Education Office; Archeology, Robert Funk, Junior Scientist, Anthropological Survey; Preservation of Study Skins, Paul F. Connor, Scientist (Zoology); Geology Field Trip, Y. William Isachsen, Associate Scientist (Geology); Aerial Field Trip, Paul Weinman, Education Office; Botany, Stanley J. Smith, Associate Curator (Botany); and Ecology, Edgar M. Reilly, Jr., Associate Curator (Zoology).

An area of service that goes beyond the State Museum building, is the distribution of natural history object loan kits to schools throughout the State. New kits included medium-sized mammal study skins and insects. Materials on the kits entitled Indian Artifacts, Bird Study Skins, and Mammal Teeth and Skulls, were standardized. With the technical assistance of the curators of zoology and entomology new fact sheets were written for several kits by Paul Weinman of the Education Office.

The tremendous increase of 130 percent in loan kit use during 1964–65, again reflects the interest and usefulness of natural history objects for teaching and display, adding greatly to the number of people served by the State Museum.

Two Education Office publications, the Museum Education Newsletter, and Museum Services, by mentioning specific services, are mainly responsible, for the increased use of loan kits, and for the great interest in the State Museum Film Festival. The Film Festival drew 5,300 people in the summer of 1964 — more than five times the total attendance of the 1963 program. The winter-spring schedule of 12 films had an attendance of over 1,900 but attendance declined after the first weeks because of the awkward 4 p.m. showing time and poor seating.

Twenty-four thousand issues of the Museum Education Newsletter were mailed in 1964–65 to a total of 3,000 teachers. And 25,500 publications were sent out in answer to mail requests or given to visiting teachers, teachers who attended the workshop series, teachers requesting loan kits, and those who came directly to the Education Office. Of these, 23,000 were State Museum Education Leaflets, and about 12,000 were guides to museum services.

MUSEUM CURATORS

The museum curator, the person in charge of the collections, fulfills the responsibilities within his study specialty by accumulating and maintaining the collections, by keeping collection records, by making the collections available for reference, research, and museum extension, and by doing both laboratory and field research within his specialty.

During 1964–65 as an additional activity, the curators of archeology and zoology represented the interests of all the curators on the Museum Planning Committee working on plans for the proposed new State Museum building in the South Mall State office complex. Office and range space as well as general exhibit plans were presented

and discussed. Several museums were visited in view of this responsibility.

Major activities of the curators within their particular specialties were:

- Archeology. In addition to accessioning, cataloging and checking anthropological materials received as donations or from the researches of the Science Service, the curator gave assistance to approximately 200 visitors from the United States and abroad, in their requests for information on Indian subjects and the identification of specimens, or to study the collection.
- Entomology. Research activities dealt with the identification and classification of the leaf beetles (Chrysomelidae: Coleoptera). Eight 18″ by 18″ insect exhibits for use in the museum or for loans were prepared. Several thousand insect specimens were added to the collection.
- Botany. Work was continued on "A Check List of Grasses of New York State." Over 4,000 collections of plants were accessioned, including a notable donation of 837 bryophytes from western New York presented by associates of the University of Rochester, who were supported by a National Science Foundation grant, for the study of Bryoflora of the Genesee region.
- Geology. Cooperation with other institutions included the preparation of exhibit material for loans. Research continued on a study of mineral growth in the Helderberg limestones. Special services included public lectures, school group guidance, and tours of the Geological Survey laboratories.
- Zoology. Work proceeded on the maps of bird ranges for the *Handbook of North American Birds,* a projected six volume series financed by the American Ornithologists Union and executed by the State Zoologist of the Science Service. In the total of over 1,000 items cataloged, is a considerable number of specimens from the Biological Survey's Small Mammal Survey, and 465 items from the Walter Greenwood Collection of birds eggs donated to the museum. Writing on an "Atlas of American Passerine Birds" and a teaching aid "Mammals in New York State" continues. The latter will be prepared as a contribution to the Educational Leaflet series.
- Paleontology. Scientists who were assisted in their study of portions of the collections were from Cornell University, the U.S. Geological Survey, Syracuse University, the U.S. National Mu-

seum, the Australia National University of Canberra, Harpur College, Harvard College, University of Chicago, Corning Community College, the Friedrich Wilhelm University of Bonn, and Phillips University, Marburg-Lahn, of West Germany. Cards for 250 new type specimens were added to the collection and cataloged.

A two-part diorama installed in Paleontology Hall showing the animals which lived near the surface and at the bottom of the sea which covered New York during the Ordovician period over 435 million years ago.

Publications

Four Museum bulletins, including an annual report, were printed in 1964–65. They totaled 285 pages of text, 23 figures, and two maps. One publication in the map and chart series was issued. Eleven miscellaneous publications of newsletter type were issued in multilith; three numbers of the *Empire State Geogram* totaled 48 pages, and eight pamphlets containing current information of interest to teachers contained 47 pages. Members of the staff published 28 papers, totaling about 190 pages, in outside books, journals, etc.

At the close of the year, seven manuscripts had been accepted for publication. Two were designed for the map and chart series; the others will be Museum bulletins.

State Museum and Science Service

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Ritchie, W. A.
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Appendix A

1965 GRADUATE STUDENTS
HONORARIA RECIPIENTS

Anthropology

ABLER, THOMAS S., University of Wisconsin, Milwaukee
An ethnohistorical study in purposeful culture change: the Seneca Nation, 1848–1965 ..... $480

Botany

GINNS, JAMES H., State University College of Forestry at Syracuse University
Study of *Merulius* to determine their importance in decay of woody material, particularly slash 300

LARSEN, MICHAEL J., State University College of Forestry at Syracuse University
Taxonomic analysis of wood-rotting fungi in genus *Tomentella* Pat. 480

Entomology

RUTLEY, MARY S., State University College at Potsdam
Ecological study of a brook 264

Geology

* FULLERTON, DAVID S., Princeton University
Pleistocene glacial stratigraphy and chronology, Upper Mohawk Valley, New York 480

HARRINGTON, JONATHAN W., Cornell University
Investigation of Late Devonian rhynchonellids 120

* HELENEK, HENRY L., Brown University
Investigation of the origin, structure and metamorphic evolution of major rock units in the Hudson Highlands 480

JOHNSON, KENNETH G., Rensselaer Polytechnic Institute
Study of Tully limestone eastern equivalents 480

LETTENEY, COLE D., Syracuse University
Lithologies, structures, and evolution of Thirteenth Lake dome, southcentral Adirondack Highlands ... 420

* Renewal.

* LINDHOLM, ROY C., Johns Hopkins University	
Petrology of the Onondaga limestone	300
* TURNER, BRIAN B., University of Kansas	
Study of southwestern quarter of Schroon Lake quadrangle	480
WALKER, KENNETH R., Yale University	
Sedimentology and paleoecology of lower Middle Ordovician Black River Group of New York State	420

Zoology

HINDERSTEIN, BARRY, Queens College, City University of New York	
Study of salamanders of Long Island	480
POPPER, ARTHUR N., Queens College, City University of New York	
Study of two species of fish of genus *Menidia*	480
	$5,664

* Renewal.

Appendix B

Conferences and professional meetings in which the Museum and Science Service staff participated and offices held by staff:

American Academy of Allergy, Bal Harbour, Florida—Ogden**
American Anthropological Association, annual meeting, Detroit; board meeting, Pittsburgh—Fenton**
American Association for the Advancement of Science, Montreal, Canada—Collins
American Association of Museums, annual meeting, Philadelphia, Pa.—Fenton
American Committee for International Wildlife Protection, annual meeting, New York—Cahalane
American Indian Ethnohistoric Conference, Philadelphia, Pa.—Fenton*
American Mosquito Control Association, annual meeting, Tampa, Florida—Collins**
American Ornithologists Union, annual meeting, Lawrence, Kansas —Cahalane*, Palmer
American Petroleum Institute, Lewis Run, Pennsylvania — Van Tyne
American Phytopathological Society, Northeastern Division, annual meeting New Brunswick, N.J.—De Groot
American Public Health Association, New York—Moxham
American Society of Mammalogists, annual meeting, Winnipeg, Manitoba and Hudson Bay—Connor
Association of American State Geologists, annual meeting, San Francisco, Calif.—Broughton
Chemical Specialties Manufacturers Association, Atlantic City, N.J.—Collins
Clay Mineral Society, Madison, Wis.—Borst
Commissioner's Staff Conference, Diamond Point—Fenton
Conference concerning grant for museum planning, Ford Foundation, New York—Cahalane
Conference on Analytical Chemistry and Applied Spectroscopy, Pittsburgh, Pa.—Moxham
Conference on Problems at the Urban and Rural interface, Ohio State University, Columbus, Ohio—Broughton, Davis
Conference on Underwater Archeology, Lake George — Fenton, Ritchie
Defenders of Wildlife, annual and executive committee meetings, Washington, D.C.—Cahalane**

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* Gave paper or address
** Holder of office in organization

Earth Science Teacher Preparation meetings, Boulder, Colo. and Miami, Fla.—Isachsen
Eastern States Archeological Federation, annual meeting, Attleboro, Mass.—Funk, Gillette**
Eastern States Plant Board meeting, New York—Collins
Elementary & Secondary Education Act of 1965 meeting, New York—Cahalane
Empire State Sand, Gravel and Readi-Mix Association, Saratoga —Broughton
Engineering Societies of Western Pennsylvania, Bradford, Pa.—Van Tyne
Entomological Society of America, Eastern Branch, annual meeting, Baltimore, Maryland; annual meeting, Philadelphia, Pa.—Collins
Geological Society of America, Miami, Florida—Isachsen
Governor's Conference on Libraries, Albany—Fenton
Gypsy Moth Conference, New Haven, Conn.—Connola
International Botanical Congress (Xth), Edinburgh, Scotland—Ogden**
International Congress of Americanists (XXXVIth), Madrid, Spain—Ritchie*
International Congress of Anthropological and Ethnological Sciences, Moscow—Fenton**
International Congress of Entomology (XIIth), London, England —Jamnback
Interstate Commission of the Lake Champlain Basin, Lake Placid —Davis
Interstate Oil Compact Commission meeting, Pittsburgh, Pa.—Kreidler
Midwest Industrial Mineral Forum, Columbus, Ohio—Davis
National Academy of Sciences, Committee on International Relations in Anthropology, Washington, D.C.—Fenton
National Conference on Professional Education for Outdoor Recreation, Syracuse—Cahalane
National Institute of Allergy and Infectious Diseases, Bethesda, Maryland—Ogden
National Pest Control Association, New York—Collins
New England Intercollegiate Geological Conference, Chestnut Hill, Mass.—Isachsen
New York State Archeological Association, annual meeting, Buffalo—Funk*, Gillette, Ritchie*
  Chapter meetings:
    Auringer-Seeley Chapter, Glens Falls—Funk*
    Houghton Chapter, Buffalo—Gillette
    Van Epps Hartley Chapter, Albany and Fonda—Funk, Gillette**, Ritchie*
New York State Conservation Department, Forest Pest Control Bureau, annual meeting and planning session, Johnstown—Collins, Connola

* Gave paper or address
** Holder of office in organization

New York State College of Forestry, Tree Pest Subcommittee, Syracuse—Connola
New York State Divers Association, annual meeting, Lake George —Ritchie
New York State Geological Association meeting, Albany—Borst, Broughton, Davis, Fisher, Isachsen, Kreidler, Moxham, Rickard
New York State Oil Producers meeting,Wellsville—Kreidler, Van Tyne
New York State Pesticide Board meetings, Albany and Geneva—Collins
North American Wildlife Conference (30th), Washington, D.C. —Cahalane
Northeastern Anthropological Conference, Poughkeepsie—Fenton, Funk, Gillette, Ritchie
Northeastern Forest Pathologists' Workshop, Quebec, Canada—De Groot
Northeastern Forest Pest Control meeting, Boston, Mass.—Collins, Connola, De Groot
Northeastern Forest Tree Improvement Council meeting, University Park, Pa.—Connola
Northeastern Shade Tree Conference, Boston, Mass.—Collins, Connola, De Groot
Northern Appalachian Geological Society, Bradford, Pa.—Van Tyne
Ontario Department of Mines Field Conference, Sudbury, Ontario, Canada—Davis, Isachsen, Moxham
Paleontological Research Institute, semi-annual meeting, Ithaca—Fisher, Rickard
Peck Mycological Foray, Olean—De Groot
Professional New York State Planners, semi-annual meeting, Rochester—Davis
Rochester Academy of Arts and Sciences, Rochester—Broughton**
Shaker Museum, Old Chatham—Fenton**
Sigma Xi, Albany—Ogden**
Southeastern Archeological Conference (21st), annual meeting, New Orleans, La.—Ritchie*
State Natural Resources Committee for Cornell and Syracuse Universities, Geneva and Syracuse — Cahalane, Collins
State University of New York, New York—Fenton
Syracuse University, Syracuse—Van Tyne
University of Durham, Colloquium on Simuliidae, Durham, England—Jamnback
University of Oklahoma, conference on anthropological research, Norman, Okla.—Fenton
Wenner Gren Foundation, Conference on Primate Behavior, New York—Fenton
Wildlife Society, annual meeting, Washington, D.C.—Cahalane
Wildlife Society, New York Chapter, Ithaca—Connor
World Health Organization, Geneva, Switzerland—Jamnback

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* Gave paper or address
** Holder of office in organization

Appendix C

Cooperative Work (Service): Extension program by the staff of State Museum and Science Service to various groups:

Academy of Natural Sciences of Philadelphia—Smith
Albany Institute of History and Art—Gillette
American Academy of Allergy—Lewis
Atmospheric Sciences Research Center—Smith
Averill Park District 4-H Camp—Reilly*
Brown University—Moxham
California Research Corporation—Borst
Cayuga County Historical Society—Fenton*
Cohoes High School—Ogden
Columbia University—Moxham*
Delhi Bird Club—Reilly*
Dutch Reform Church—Fenton*
East Greenbush Central School—Reilly*
Fenton Historical Association—Fenton*
Fort Klock Historical Association—Fenton*
Hudson Garden Circle—Reilly*
Kiwanis Club (Gloversville)—Fenton
Lebanon Valley Garden Club—Reilly*
Michigan State University—Smith
New York Botanical Garden—Smith
New York Mycological Society—Smith*
New York State Bureau of Criminal Investigation—Gillette, Smith
New York State Department of Agriculture and Markets—Smith
New York State Department of Conservation—Smith
New York State Department of Health—Smith
New York State Department of Labor—Borst
Rensselaer Junior Workshop—Gillette
Ressselaer Polytechnic Institute—Moxham*
Rockland County Farm Bureau—Collins*
Sand Lake Kiwanis Club—Reilly*
Schenectady Museum—Gillette
Seneca Nation of Indians (Salamanca)—Fenton
State University of New York at Albany—De Groot, Lewis, Ogden, Smith
State University College at Buffalo—Smith
State University College at Geneseo—Smith
St. Bonaventure University—Smith
St. David's Lane Association—Collins*

* Gave talk

St. Peter's Church Guild—Fenton*
Syracuse University—Moxham*
Taft (Robert A.) Engineering Center—Lewis
Tarrytown Historical Society—Borst
Torrey Botanical Club—Smith
Tree Protective Group—Collins*
University of Maryland—Smith
University of Massachusetts—Ogden
University of Rhode Island—Lewis, Ogden
U.S. Department of Agriculture Forest Disease Laboratory—Smith
Vassar College—Fenton*
Wood Court Homeowners Association—Collins
World Health Organization—Jamnback

* Gave talk

Appendix D

COOPERATING AGENCIES

A continuing function of the Museum and Science Service is to cooperate with agencies and organizations concerned with museum and research activities in this and other States; with the governments of the United States and Canada; with universities and industry in the discovery, analysis, and dissemination of scientific information. These contacts are frequently of reciprocal services, and they arise often out of the personal contacts of the staff and, if so listed, would measure individual participation, but they are here tabulated for the organization.

American Ornithologists Union
Brookhaven National Laboratory
Nassau County Mosquito Control Commission
National Institutes of Health
New York Botanical Garden
New York City Health Department
New York State Agricultural Experiment Station (Cornell Univ.)
New York State Department of Agriculture and Markets
New York State Conservation Department
New York State Health Department
Russell Sage College
State University College of Agriculture
State University College of Forestry
State University College of Veterinary Medicine
Suffolk County Mosquito Control Commission
The University of Rochester
U.S. Department of Agriculture
U.S. Forest Service
World Health Organization
Yale Medical School

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